

The Inevitability of Open Access: Update One

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Background

In my September 2012 article, “The Inevitability of Open Access,” I made the following prediction, “This analysis suggests that Gold OA could account for 50 percent of the scholarly journal articles sometime between 2017 and 2021, and 90 percent of articles as soon as 2020 and more conservatively by 2025.”¹

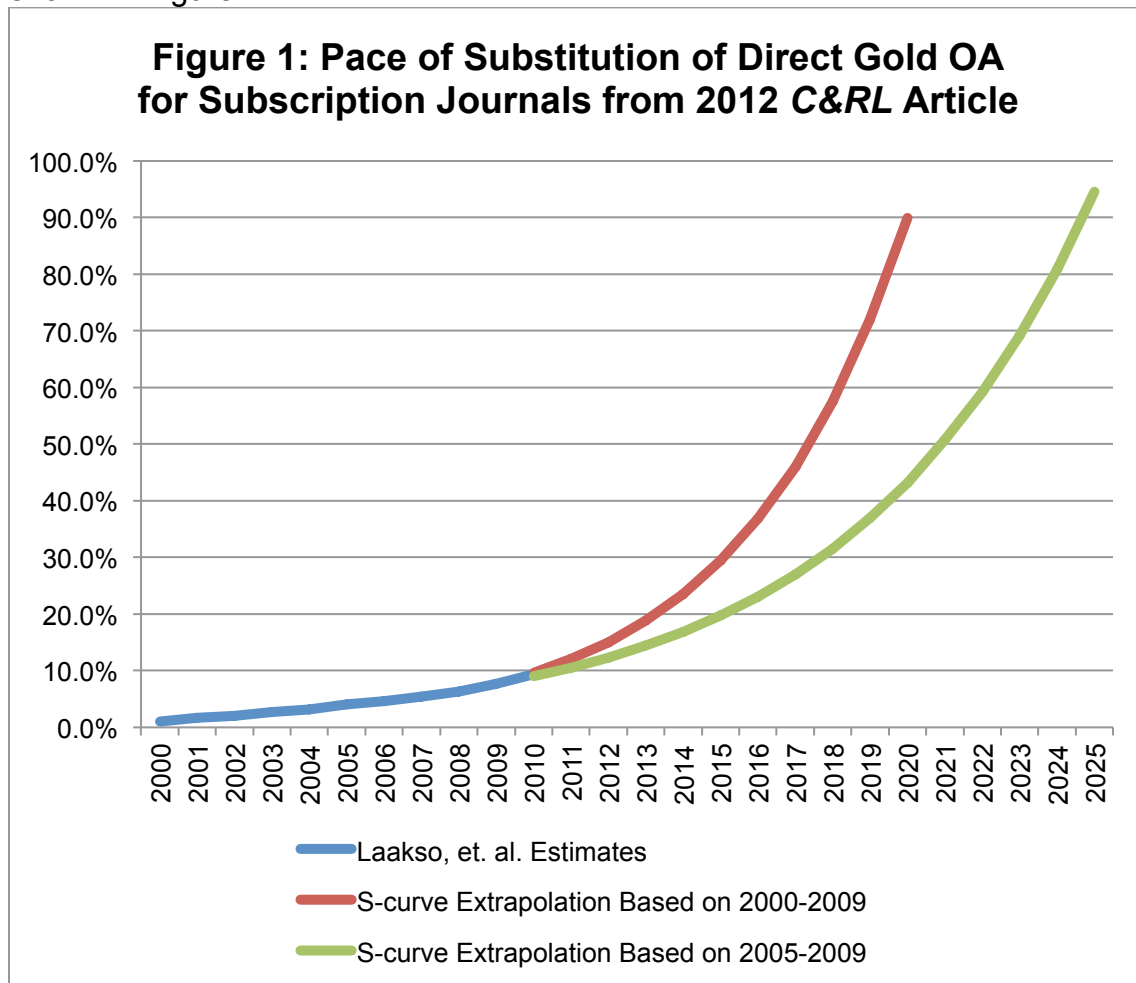
This prediction was based on data on open access publishing developed by Mikael Laakso and his colleagues.² The data covered the period from the early 1990s until 2009. For the purposes of my analysis I used the 2000 to 2009 data.

It was my assertion that Gold OA was a disruptive innovation, as the business theorist Clayton Christensen would define it. As such we could anticipate the rate of substitution of the old technology, in this case subscription journals, by

¹ Lewis, David W., “The Inevitability of Open Access.” *College & Research Libraries* 73(5):493-506 September 2012, page 493. Available at: <http://crl.acrl.org/content/73/5/493.full.pdf+html> and <http://hdl.handle.net/1805/2929>

² Mikael Laakso, Patrik Welling, Helena Bukvova, Linus Nyman, Bo-Christer Bjork, and Turid Hedlund, “The Development of Open Access Journal Publishing from 1993 to 2009,” *PLoS ONE* 6 (2011): e20961, doi:10.1371/journal.pone.0020961. Available at: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0020961

Gold OA using a model define by Christensen. Using the data from Laakso and his colleagues and Christensen's model, I predicted that Gold OA would grow as shown in Figure 1.



Recent Data

In August 2013 a European Commission study estimated the percentage of Gold OA articles in 2011 to be 11.5% based on data from Scopus.³ This figure is in the same range as the recent estimate by Mikael Laakso and Bo-Christer Björk who put the figure at 11% using data from Scopus and 9% using data from Web of Science.⁴

³ Eric Archambault, Didier Amyot, Philippe Deschamps, Aurore Nicol, Lise Rebout, and Guillaume Roberge, *Proportion of Open Access Peer-Reviewed Papers at the European and World Levels—2004-2011*, European Commission DG Research & Innovation, August 2013. Available at: http://www.science-metrix.com/pdf/SM_EC_OA_Availability_2004-2011.pdf

⁴ Mikael Laakso and Bo-Christer Björk, "Anatomy of Open Access Publishing: A Study of Longitudinal Development and Internal Structure," *BMC Medicine*

My prediction for the percentage of the scholarly literature that would be Gold OA in 2011 was between 12.1% and 10.5%. Thus the European Commission estimate is within the range and closer to my high estimate.

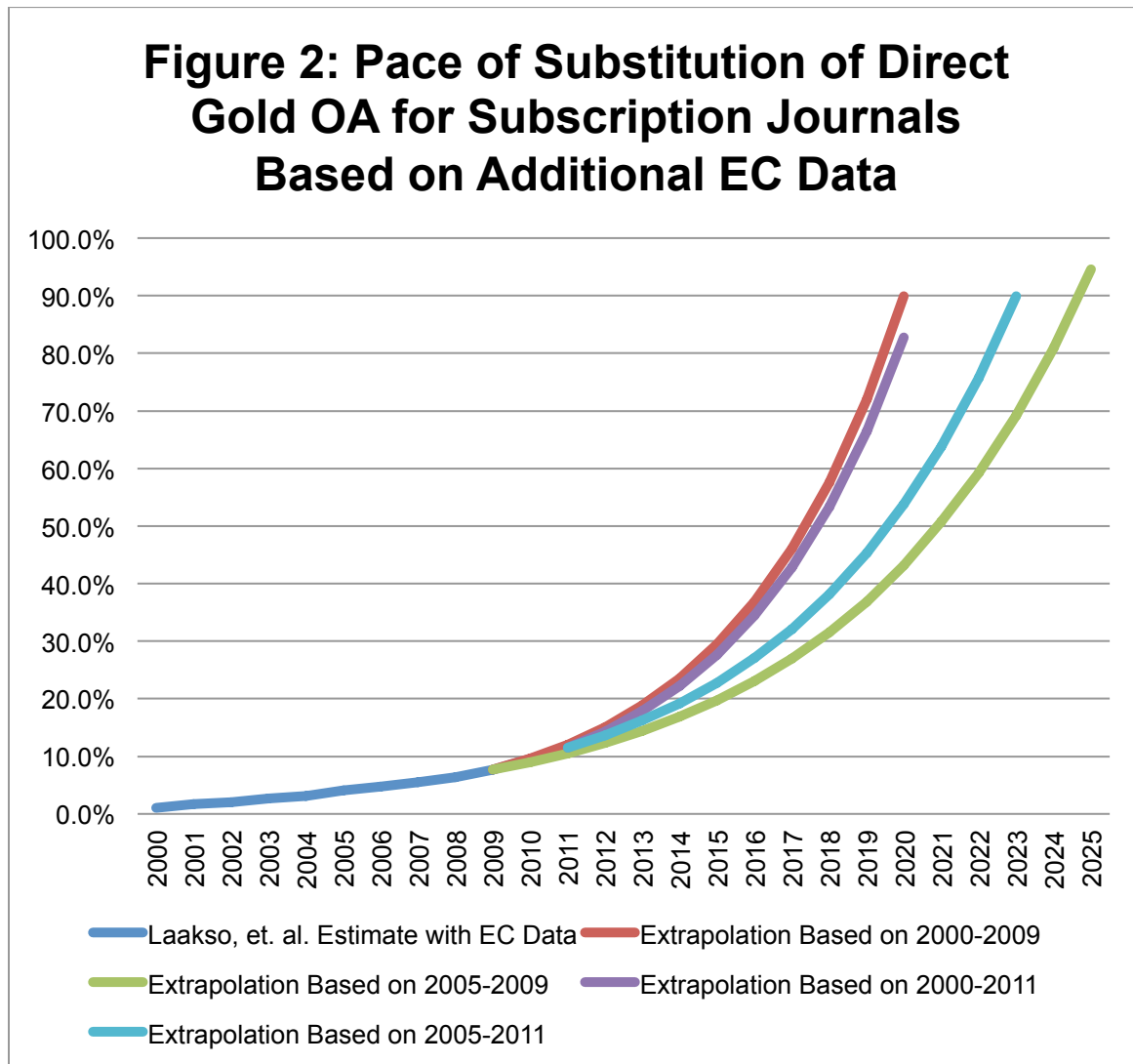
Plugging New Data into the Model

Using the European Commission figure as a new data point in my model allows it to be refined and narrows the range of the estimates in the out years. The results of doing so are shown in the table below.

	Laakso, et. al. Estimate with EC Data	Extrapolation Based on 2000-2009	Extrapolation Based on 2005-2009	Extrapolation Based on 2000-2011	Extrapolation Based on 2005-2011
2000	1.0%				
2001	1.7%				
2002	2.0%				
2003	2.7%				
2004	3.1%				
2005	4.1%				
2006	4.7%				
2007	5.5%				
2008	6.4%				
2009	7.7%	7.7%	7.7%		
2010		9.6%	9.0%		
2011	11.5%	12.1%	10.5%	11.5%	11.5%
2012		15.1%	12.3%	14.3%	13.6%
2013		18.8%	14.4%	17.8%	16.2%
2014		23.6%	16.9%	22.2%	19.2%
2015		29.4%	19.7%	27.7%	22.8%
2016		36.8%	23.1%	34.4%	27.1%
2017		46.0%	27.0%	42.9%	32.1%
2018		57.5%	31.6%	53.3%	38.2%
2019		72.0%	36.9%	66.5%	45.3%
2020		89.9%	43.2%	82.8%	53.8%
2021			50.7%		63.8%
2022			59.2%		75.7%
2023			69.2%		89.9%
2024			80.9%		

2025			94.6%		
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The graphical representation of the data is shown in Figure 2.



Conclusion

The addition of the European Commission data point suggests that we can now say:

This analysis suggests that Gold OA could account for 50 percent of the scholarly journal articles sometime between 2018 and 2020, and 90 percent of articles as soon as 2021 and more conservatively by 2024.

Caveats

This analysis relies on the assertion that Gold OA is in fact a disruptive innovation and that the adoption of disruptive innovations follows the model laid out by Clayton Christensen. I believe both of these to be reasonable assertions.

It also assumes that the data on Gold OA developed by a variety of researchers is accurate and consistent. I am not a statistician and so I am not in a position to critically judge, but they have been peer reviewed and have been published in quality venues. They are also generally consistent.

Even given these caveats, I am still prepared to say that it is inevitable that Gold OA will become the dominant business model for the publication of scholarly journal literature within the next decade.